

REMARKS

Preliminarily, as noted in our previous reply, the Examiner has not returned to us an initialled copy of the PTO-1449 Form submitted with our Information Disclosure Statement filed November 25, 2001 (filed together with the utility application). While this latest action did include an initialled copy of the PTO-1449 Form for our Information Disclosure Statement filed April 25, 2003, an initialled copy of the earlier filed PTO-1449 Form is still missing. For the Examiner's convenience, we enclose another copy of the PTO-1449 Form together with this reply, and ask the Examiner to initial each citation therein and return the initialled copy to us with his next communication.

Furthermore, as also noted in our previous reply, the Examiner has not acknowledged the priority claim under 35 U.S.C. 119(e) of the present application to provisional application 60/243,565 filed October 26, 2000, as indicated in the attached filing receipt. We ask that the Examiner acknowledge this priority claim in his next communication by checking the appropriate box on the cover sheet for his next communication.

No claims are being amended. Claims 1-7, 9-11, 13, 15-17, 20, 21, and 23 are pending. Claim 1 is the only independent claim.

The Examiner rejects claim 1 as anticipated by Joannopoulos (U.S. Patent No. 6,573,813) "based on the provisional application #60/130681 filed on April 23, 1999" (page 2 of Action). Specifically, the Examiner states:

Joannopoulos shows in Fig. 5B-5C an optical component comprising a dielectric waveguide extending along a longitudinal axis and having a refractive index cross-section perpendicular to the longitudinal axis to support an EM mode (col.6, l.51-67) having a group velocity that passes from negative values to positive values over a range of [sic] non-zero longitudinal wavevectors (Fig.9A-9C), wherein the cross-section comprises an inner region including a high index region surrounded by at least one lower index region and an outer region comprising a series of concentric layers. (Pages 2-3 of Action)

Even if we assume, for the sake of argument only, that Joannopoulos is prior art to the present application, we respectfully disagree with the Examiner's above-cited characterization of Joannopoulos, and ask that he withdraw the rejection for the following reasons.

Claim 1 recites “a dielectric waveguide ... having a refractive index cross-section ... causing the dielectric waveguide to support an electromagnetic (EM) mode having a group velocity that passes from negative values to positive values over a range of non-zero longitudinal wavevectors.” Evidently, the Examiner construes col. 6, l.51-67 and/or Fig.9A-9C of Joannopoulos as disclosing “an electromagnetic (EM) mode having a group velocity that passes from negative values to positive values over a range of non-zero longitudinal wavevectors,” as required by claim 1. But, these sections do not disclose any such mode.

With respect to col. 6, l.51-57, this section merely describes the properties of coaxial waveguide 510 that “are important in order to create a TEM-like mode” (col. 6, lines 58). It says nothing about whether that TEM mode has “a group velocity that passes from negative values to positive values over a range of non-zero longitudinal wavevectors,” as required by claim 1. To the contrary, Joannopoulos explains that “[t]he TEM mode is unique in that it has ... a linear relationship between frequency and wave vector” (col. 2, lines 7-9, emphasis added). In other words, because the group velocity is the derivative of frequency with respect to wave vector, Joannopoulos explains that the TEM mode has a constant group velocity. See, for example, applicants specification at page 1, line 26, through page 2, line 1, for this definition of group velocity. Therefore, this section cited by the Examiner (col. 6, l.51-57) does not disclose the claimed mode.

Similarly, the Examiner's reliance on Fig.9A-9C of Joannopoulos is misplaced, because it likewise does not disclose “an electromagnetic (EM) mode having a group velocity that passes from negative values to positive values over a range of non-zero longitudinal wavevectors,” as required by claim 1. To the contrary, “FIGS. 9A-9C show the distribution of the electric field components for the $m=0$ mode of the coaxial omniguide 520” (col. 9, lines 57-59). Therefore, the “positive” and “negative” referred to Figs.9A-9C pertain to the electric field components, not the group velocity.

Finally, we point out that Joannopoulos specifically shows that waveguide 510 (whose index and thickness parameters are explicitly described at col.6, lines 51-67, the section cited by the Examiner) has the band structure shown in Fig. 6C (see, col. 8, lines 13-14), and that this

band structure only shows a positive group velocity (i.e., a positive derivative of frequency with respect to wave vector) for the modes of waveguide 510, in direct contrast to claim 1. Similarly, the band structure in FIG. 8 likewise shows positive group velocities for waveguide 520 (whose cross-section is shown in FIG. 5C and whose parameters are described at col. 9, lines 30-36).

Accordingly, because the sections of Joannopoulos cited by Examiner fail to disclose or suggest the waveguide claimed in claim 1, let alone enable one of ordinary skill in that art to make it (as required by MPEP 2121.01), we respectfully ask the Examiner to withdraw the rejection.

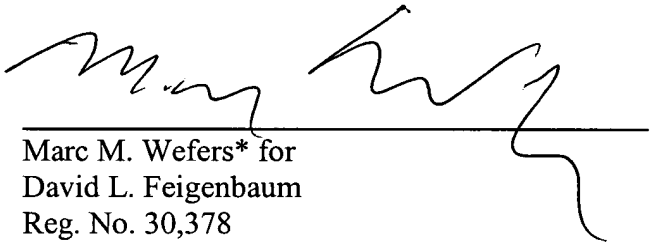
We do wish to draw the Examiner's attention to col. 9, lines 46-56, of Joannopoulos and footnote 19 in reference AP submitted with applicants' April 25, 2003, Information Disclosure Statement.

We ask that all claims be allowed.

Enclosed is a check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

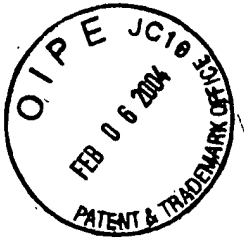
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***See attached document certifying that Marc M. Wefers has limited recognition to practice before the U.S. Patent and Trademark Office under 37 C.F.R. § 10.9(b).**



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Expires: December 6, 2004

Harry I. Moatz
Director of Enrollment and Discipline